

REMARKS

Claims 1-3, 5-12, 14 and 16-20 are pending in the present application. By this Amendment, claims 3, 5, 8, 11 and 16 are amended, and claims 17-20 are added. No new matter is involved.

Claims 1, 6-9, and 15 are independent. Reconsideration of this application, as amended, is respectfully requested.

TELEPHONE INTERVIEW

Applicants acknowledge with appreciation the courtesies extended by Examiner Cindy Khuu to their below-named representative, Mr. Robert J. Webster, during a telephone interview conducted on August 28, 2007. During that interview, the claimed invention was discussed, and the differences between the claimed invention and the art applied in the outstanding rejections of the pending claims, was also discussed. Examiner Khuu kindly brought U.S. Patent 7,249,498 to Applicant's attention. The '498 patent has no common inventor with this Application, but is commonly assigned to the same assignee to which this Application is assigned. Applicant respectfully submits that the '498 patent is not prior art to Applicant at least because of its filing date.

CLAIM OBJECTION

The Office Action objects to claims 8 for omitting the preposition "at." This objection is respectfully traversed in view of the amendment of claim 8 to include that preposition, as kindly suggested by the Examiner.

Reconsideration and withdrawal of this objection are respectfully requested.

REJECTIONS UNDER 35 USC § 103

Claims 1-3 and 5 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,692,089 to Kuwajima et al. ("Kuwajima") in view of U.S. Patent 6,038,933 to Meyer. This rejection is respectfully traversed.

Because the rejection is based on 35 U.S.C. § 103, what is in issue in such a rejection is "the invention as a whole", not just a few features of the claimed invention. Under 35 U.S.C. § 103, "[a] patent may not be obtained . . . if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains." The determination under section 103 is whether the claimed invention as a whole would have been obvious to a person of ordinary skill in the art at the time the invention was made. See In re O'Farrell, 853 F.2d 894, 902, 7 USPQ2d 1673, 1680 (Fed. Cir. 1988). In determining obviousness, the Examiner must explain what the differences between the claimed invention and the prior art are and provide objective factual evidence to support a conclusion that it would be obvious to one of ordinary skill in the art to achieve the claimed invention, which includes those missing features.

In the second place, in rejecting claims under 35 U.S.C. § 103, it is incumbent on the examiner to establish a factual basis to support the legal conclusion of obviousness. See, In re Fine, 837 F.2d 1071, 1073, 5 USPQ2d 1596, 1598 (Fed. Cir. 1988). In so doing, the examiner is expected to make the factual determinations set forth in Graham v. John Deere Co., 383 U.S. 1, 17, 148 USPQ 459, 467 (1966), and to provide a reason why one of ordinary skill in the pertinent art would have

been led to modify the prior art or to combine prior art references to arrive at the claimed invention. Such reason must stem from some teaching, suggestion or implication in the prior art as a whole or knowledge generally available to one having ordinary skill in the art. Uniroyal Inc. v. F-Wiley Corp., 837 F.2d 1044, 1051, 5 USPQ2d 1434, 1438 (Fed. Cir. 1988), cert. denied, 488 U.S. 825 (1988); Ashland Oil, Inc. v. Delta Resins & Refractories, Inc., 776 F.2d 281, 293, 227 USPQ 657, 664 (Fed. Cir. 1985), cert. denied, 475 U.S. 1017 (1986); ACS Hospital Systems, Inc. v. Montefiore Hospital, 732 F.2d 1572, 1577, 221 USPQ 929, 933 (Fed. Cir. 1984). These showings by the examiner are an essential part of complying with the burden of presenting a *prima facie* case of obviousness. Note, In re Oetiker, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992). The mere fact that the prior art may be modified in the manner suggested by the Examiner does not make the modification obvious unless the prior art suggested the desirability of the modification. In re Fritch, 972 F.2d 1260, 1266, 23 USPQ2d 1780, 1783-84 (Fed. Cir. 1992). To establish *prima facie* obviousness of a claimed invention, all the claim limitations must be suggested or taught by the prior art. In re Royka, 490 F.2d 981, 180 USPQ 580 (CCPA 1970). All words in a claim must be considered in judging the patentability of that claim against the prior art. In re Wilson, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970).

A showing of a suggestion, teaching, or motivation to combine the prior art references is an “essential evidentiary component of an obviousness holding.” C.R. Bard, Inc. v. M3 Sys. Inc., 157 F.3d 1340, 1352, 48 USPQ2d 1225, 1232(Fed. Cir. 1998). This showing must be clear and particular, and broad conclusory statements about the teaching of multiple references, standing alone, are not “evidence.” See In re Dembiczak, 175 F.3d 994 at 1000, 50 USPQ2d 1614 at 1617

(Fed. Cir. 1999).

Moreover, a factual inquiry whether to modify a reference must be based on objective evidence of record, not merely conclusory statements of the Examiner. See, In re Lee, 277 F.3d 1338, 1343, 61 USPQ2d 1430, 1433 (Fed. Cir. 2002).

Kuwajima differs significantly from the claimed invention for a number of reasons.

Kuwajima is directed to a brake control device and method that employs a vehicle wheel velocity/vehicle velocity detection unit 12 that determines a vehicle velocity and a wheel velocity of a traveling vehicle (col. 6, lines 25-46). Kuwajima also measures a load applied to each wheel, an acceleration, and obtains a load distribution applied to the wheels to set a rolling radius using a load applied to each wheel, which is found based on the load distribution (paragraph bridging cols. 6 and 7.) Kuwajima also calculates (1) a current slip velocity and a current slip ratio based on vehicle velocity and wheel velocities, (2) an optimum slip velocity at which a maximum friction force is generated for a tire, to generate a braking force control signal (col. 9, lines 35-57).

The Office Action does not even address Kuwajima's disclosure of measuring a load applied to each wheel, which is clearly a measurement of a force on a wheel, or what Kuwajima's measuring of a load applied to each wheel has to do with (1) obtaining data on a relationship between the force exerted on the vehicle wheel and a physical parameter of the vehicle wheel at at least one predetermined measuring position; (2) deriving a formula that calculates the physical parameter in terms of the magnitude of the force exerted on the vehicle wheel, using the obtained data on the relationship; (3) measuring the physical parameter of the vehicle wheel during rolling; (4) computing the formula using the measured physical parameter to calculate the force; and (5) outputting the

calculated force, as recited in claim 1.

Thus these positively recited features of claim 1 are not clearly even addressed in this rejection.

Moreover, the Office Action clearly admits that Kuwajima does not explicitly teach making or deriving a formula that calculates the physical parameter in terms of the magnitude of the force exerted on the vehicle wheel, or using the obtained data on the relationship. Applicant agrees with this admission and also respectfully submits that the Office Action is improper in that it does not explain what Kuwajima's physical parameter that is measured during vehicle rolling is, or what the computed formula is that uses the unspecified physical parameter to calculate the force.

In an attempt to remedy these shortcomings of Kuwajima, the Office Action asserts that Kuwajima inherently teaches making or deriving a formula that calculates the physical parameter in terms of the magnitude of the force exerted on the vehicle wheel, or using the obtained data in the relationship. In this regard, the Office Action relies on the ECU calculation of slip ratio in "col. 9, lines 42-23" (which is an unclear, backwards citation and, presumably refers to col. 9, lines 42-63).

Applicant respectfully submits that, for something to be inherently disclosed, it cannot be just possibly disclosed, and it cannot be just probably disclosed. Rather, what is inherently disclosed must be necessarily disclosed. In re Oelrich, 666 F.2d 578, 581, 212 USPQ 323, 326 (CCPA 1981) and In re Rijckaert, 9 F.3d 1531, 1534, 28 USPQ2d 1955, 1957 (Fed. Cir. 1993).

Applicant also respectfully submits that col. 9, lines 42-63 of Kuwajima has nothing whatsoever to do with determining the force exerted on a vehicle wheel. This portion of Kuwajima merely calculates slip velocity, which is not a force on a vehicle wheel but, instead, is actually the

ratio between vehicle velocity and tire peripheral velocity, which is not a force on a wheel, nor is it even a ratio of forces.

Accordingly, Kuwajima does not disclose or suggest the claimed invention.

The Office Action then attempts to somehow modify Kuwajima so that Kuwajima measures the magnitude of the radial strain on the wheel.

Applicant respectfully submits that Kuwajima only measures the load applied to each wheel (paragraph bridging cols. 6 and 7), and does not disclose how this is accomplished. In any event, Kuwajima never discloses measuring the radial strain on a vehicle wheel.

The Office Action turns to Meyer, and asserts that Meyer discloses that the physical parameter is the magnitude of a radial strain in the radius part, referencing col. 3, lines 18-24, and concludes, referencing col. 1, lines 50-51 of Meyer, that it would be obvious to modify Kuwajima to “include the teaching of Meyer because it would allow force and moment to be measured in plural directions.”

Applicant respectfully submits that the Office Action fails to make out a *prima facie* case of obviousness of the claimed invention for the following additional reasons.

While Meyer discloses a load cell 10 for measuring the force and moment components of a rolling wheel using a plurality of strain sensors 44, 46, Meyer never discloses exactly how Meyer’s sensed/measured strain is used, and Kuwajima does not disclose that its load sensor measures strain. For this reason alone, the Office Action does not satisfactorily explain why one of ordinary skill in the art would be properly motivated to turn to Meyer to modify Kuwajima.

Furthermore, even if, solely for sake of argument, Meyer were used in Kuwajima, Kuwajima,

so modified, would still not (1) obtain data on a relationship between the force exerted on the vehicle wheel and a physical parameter of the vehicle wheel at at least one predetermined measuring position; (2) derive a formula that calculates the physical parameter in terms of the magnitude of the force exerted on the vehicle wheel, using the obtained data on the relationship; (3) measure the physical parameter of the vehicle wheel during rolling; (4) compute the formula using the measured physical parameter to calculate the force; and (5) output the calculated force, as recited in claim 1.

Accordingly, the Office Action fails to make out a *prima facie* case of obviousness of the invention recited in claims 1-3 and 5.

Reconsideration and withdrawal of this rejection of claims 1-3 and 5 are respectfully requested.

Claims 6-8 and 16 stand rejected under 35 USC § 103(a) as unpatentable over Kuwajima in view of U.S. Patent 4,171,641 to Landsness. This rejection is respectfully traversed.

For reasons discussed above, Kuwajima does not disclose or suggest the combination of features recited in claims 6-8 and 16. In other words, Kuwajima does not disclose or suggest (1) obtaining data on a relationship between the force exerted on the vehicle wheel and a physical parameter of the vehicle wheel at at least one predetermined measuring position; (2) deriving a formula that calculates the physical parameter in terms of the magnitude of the force exerted on the vehicle wheel, using the obtained data on the relationship; (3) measuring the physical parameter of the vehicle wheel during rolling; (4) computing the formula using the measured physical parameter to calculate the force; and (5) outputting the calculated force, as recited in claims 6-8 and 16, as

explained above.

Moreover, Landsness is not applied to remedy the aforementioned shortcomings of Kuwajima so, even if, for sake of argument, one of ordinary skill in the art were properly motivated to modify Kuwajima to include the Landsness hub assembly with strain gauges 44, the so-modified version of Kuwajima would still not render the claimed invention obvious.

Additionally, Applicant respectfully submits that one of ordinary skill in the art would not be motivated to modify Kuwajima, as suggested, in view of Landsness because, while Landsness measures force of a wheel using a plurality of strain sensors 44, Landsness never discloses exactly how Landsness's sensed/measured strain is used, and Kuwajima does not disclose that its load sensor measures strain. For this reason alone, the Office Action does not satisfactorily explain why one of ordinary skill in the art would be properly motivated to turn to Landsness to modify Kuwajima.

Furthermore, Landsness does not disclose that its sensor unit rotates together with the wheel and, from an inspection of Fig. 3, it would appear that the Landsness sensor unit has to be used in a stationary position in a test rig, so one of ordinary skill in the art would not be motivated to use it in Kuwajima, which is used in a rolling vehicle, i.e., not a stationary vehicle with a test rig.

Accordingly, the Office Action fails to make out a *prima facie* case of obviousness of the invention recited in claims 6-8 and 16.

Reconsideration and withdrawal of this rejection of claims 6-8 and 16 are respectfully requested.

Claims 9-13 stand rejected under 35 USC § 103(a) as being unpatentable over Meyer in view

of Landsness. This rejection is respectfully traversed.

Meyer, the primary reference used in this rejection, discloses a load cell 10 and a control circuit used to provide output signals indicative of force and moment components on the load cell. Meyer does not contain a memory which has a formula that calculates a physical parameter in terms of a force exerted on a wheel. Nor does Meyer disclose a device for locating at least one of Meyer's strain sensors 44, 46 in order to measure the physical parameter when the sensor is in a predetermined position, nor does Meyer disclose a processor that uses physical parameter data read from the at least one strain sensor to compute the formula to calculate the force, and to output data on the force, as recited in claim 9.

The Office Action speculates that Meyer inherently teaches a memory in which a formula for calculating a physical parameter of a vehicle in terms of the force exerted on the vehicle wheel at at least one predetermined measuring position is stored. Applicant respectfully disagrees and notes that there is not even a possibility (let alone a necessity, as required by the aforementioned case law) of this being the case, because Meyer merely discloses that its control circuit is used to provide output signals indicative of force and moment components on the load cell (col. 7, lines 5-28). Moreover, in the relied upon col. 6, lines 50-54, Meyer merely discloses that the controller 82 merely calculates, records and/or displays the force and moment components measured by the load cell.

Furthermore, Meyer clearly has no disclosure of a device for locating the at least one sensor to measure the physical parameter when the sensor is at the predetermined position. The Office Action even admits this.

In an attempt to remedy the shortcomings of Meyer, the Office Action turns to Landsness,

which uses a stationary sensor unit 30, having a plurality of strain sensors 44 and a test rig, shown in Fig. 1, that measures imbalanced forces on a tire. Landsness does not contain a memory which has a formula that calculates a physical parameter in terms of a force exerted on a wheel. Nor does Landsness disclose a device for locating at least one of Landsness' strain sensors 44 in order to measure the physical parameter when the sensor is in a predetermined position, nor does Landsness disclose a processor that uses physical parameter data read from the at least one strain sensor to compute the formula to calculate the force, and to output data on the force, as recited in claim 9.

The Office Action asserts that Landsness uses its encoder 37 to locate at least one sensor to measure a physical parameter when the sensor is at a predetermined measuring position, referencing col. 2, lines 50-53. Actually, this portion of Landsness discloses that encoder 37 is only used to determine locations of portions of the hub assembly 30 and the tire 31 relative to other portions of the tire, and is in a significantly different system, i.e., one which uses stationary, non-rotating strain sensors whose positions are already known and do not need an encoder to make them known. In other words, one of ordinary skill in the art would not be properly motivated to combine these references, as suggested, because, if these references were combined in the manner suggested, it is not clear what would result, let alone whether it would result in an operable device.

The stated rational for the motivation to combine these two references, as suggested, is to correct for imbalanced forces. However, as pointed out above, one of ordinary skill in the art would not be motivated to use an encoder that does not determine a predetermined sensor position, or to modify Meyer's rotating load cell with a stationary load cell.

The Examiner may not pick and choose from any one reference only so much of it as will

support a given position, to the exclusion of other parts necessary to the full appreciation of what such reference fairly suggests to one of ordinary skill in the art. Bausch & Lomb, Inc. v. Barnes-Hind/Hydrocurve Inc., 796 F.2d 443, 448, 230 USPQ 416, 419 (Fed. Cir. 1986), cert. denied, 484 U.S. 823 (1987) and In re Kamm, 452 F.2d 1052, 1057, 172 USPQ 298, 301-2 (CCPA 1972), and obviousness cannot be established by locating references which describe various aspects of Appellants' invention without also providing evidence of the motivating force which would impel one skilled in the art to do what Appellants have done. Ex parte Levingood, 28 USPQ2d 1300, 1302 (Bd. App. & Int. 1993).

Accordingly, the Office Action fails to make out a *prima facie* case of obviousness of the invention recited in claims 9-13.

Reconsideration and withdrawal of this rejection of claims 9-13 are respectfully requested.

Claim 15 stands rejected under 35 USC § 103(a) as being unpatentable over Meyer in view of Landsness and further in view of Kuwajima. This rejection is respectfully traversed.

The Meyer-Landsness reference combination does not render obvious the subject matter of claim 9, from which claim 15 depends, for reasons discussed above. Nor is Kuwajima applied to remedy the deficiencies noted above with respect to the Meyer-Landsness reference combination. Therefore, even if one of ordinary skill in the art were properly motivated to turn to Kuwajima to modify the Meyer-Landsness reference combination, as suggested, the so modified Meyer-Landsness reference combination would not render obvious the claimed invention.

Furthermore, Kuwajima does not disclose making a braking force maximum during braking.

Instead, Kuwajima is directed to shortening the time lag before the brake control starts to reduce a braking distance – see col. 1, lines 8-18, and the paragraph bridging cols. 5 and 6. Moreover, Kuwajima bases its reduced time lag on a slip ratio, which has nothing to do with measured forces on a wheel.

The assertion that Kuwajima controls the braking mechanism so that the braking force becomes a maximum during braking is simply incorrect.

Accordingly, Applicant respectfully submits that, no matter how these three references are combined, they cannot possibly render the claimed invention obvious, and the Office Action fails to make out a *prima facie* case of obviousness of the claimed invention.

Reconsideration and withdrawal of this rejection of claim 15 are respectfully requested.

NEW CLAIMS

Claims 17-20 have been added. These claims depend from claims 6, 7, 8 and 9, respectively, and are allowable for at least that reason, and for reasons discussed above presented to traverse the rejections of claims 6-9. Furthermore, claims 17-20 recite specific details of the claimed force.

CONCLUSION

All the stated grounds of rejection have been properly traversed and/or rendered moot. Applicant therefore respectfully requests that the Examiner reconsider all presently pending rejections and that they be withdrawn, and that all pending claims be allowed.

It is believed that a full and complete response has been made to the Office Action, and that

as such, the Examiner is respectfully requested to send the application to Issue.

In the event there are any matters remaining in this application, the Examiner is invited to contact Robert J. Webster, Registration No. 46,472 at (703) 205-8076 in the Washington, D.C. area.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees.

Date: August 30, 2007

Respectfully submitted,

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